Contact geometry and Legendrian knots

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102 Bradley Hall, 4:00 pm
(Tea 3:30 pm Math Lounge)

Abstract

Contact geometry is a venerable subject that arose out of the study of Geometric Optics in the 1800's. Though the years it has repeatedly cropped up in many areas of mathematics, but only in the past 30 years or so has it received serious attention. In the recent past there have been many breakthroughs in the study of contact geometry that hint at surprising connections with low dimensional topology, complex geometry and dynamics.

In this talk, I will briefly survey the history of contact geometry and then describe some of these recent breakthroughs. A key player in the talk will be Legendrian knots. These are knots that are well adapted to the contact geometry. I will describe various ways of studying these knots, indicate how they mediate some of the subtle connections to topology, and discuss what is known of their classification.

This talk should be accessible to graduate students.